

RESEARCHES CONCERNING THE NEW POT VARIETIES OF *ANTHURIUM ANDREANUM* USED FOR INDOOR DESIGN

CERCETĂRI PRIVIND COMPORTAREA UNOR VARIETĂȚI NOI DE *ANTHURIUM ANDREANUM* CULTIVATE LA GHIVECE FOLOSITE ÎN DESIGNUL INTERIOR

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Abstract. The diversity in varieties has been greatly increased in recent years through breeding and selection work. *Anthurium andreanum* is a plant that formerly was known particularly as a cut flower, but in recent years is more and more appreciated as a pot plant thanks to its elegance, but also for the contrast between the color of the leaves and the brightly flowers. Diversification of the assortment with new varieties of floricultural plants is a permanent work of specialists in our country for the promotion and commercialization of novelties in order to obtain substantial incomes. This paper shows the behavior of six new pot varieties of *Anthurium* (Alpine, Absolut, Baleno, Alabama, Cherry champion and Otazu), imported from Netherlands and which have been studied at the Flower shop „Briza” Cluj-Napoca and in didactical greenhouses at U.S.A.M.V. Cluj-Napoca. Observations and measurements were made on the leaves and flowers (number, length, width, diameter, number of flower/plant). All the data obtained were interpreted statistically by calculating the average and has tested the significance of differences between variants using LSD test. There were also analyzed the coefficients of variability.

Key words: varieties, floral assortment, morphological characteristics

Rezumat. Diversitatea soiurilor a crescut mult în ultimii ani datorită muncii de ameliorare și selecție. *Anthurium andreanum* este o plantă care în trecut era cunoscută în mod deosebit ca floare tăiată, dar în ultimii ani este tot mai mult apreciată și ca plantă la ghiveci datorită eleganței deosebite, a contrastului între culoarea frunzelor și cea viu colorată a florilor. Îmbogățirea sortimentului cu noi soiuri de plante floricole este o permanentă preocupare a specialiștilor din țara noastră pentru promovarea și comercializarea noutăților în scopul obținerii de venituri substanțiale. Lucrarea de față prezintă comportarea a 6 soiuri noi de *Anthurium* la ghivece (Alpine, Absolut, Baleno, Alabama, Cherry champion și Otazu), importate din Olanda și care au fost studiate la Florăria „Briza” Cluj-Napoca și în serele didactice de la U.S.A.M.V. Cluj-Napoca. Asupra acestor soiuri s-au efectuat observații și măsurători asupra frunzelor și florilor (număr, lungime, lățime, diametru, numărul de flori obținute pe plantă). Toate datele obținute au fost interpretate statistic, calculându-se media și s-a testat semnificația diferențelor dintre variante cu ajutorul testului DL. Au fost analizați și coeficienții de variabilitate.

Cuvinte cheie: varietăți, sortiment floral, caracteristici morfologice

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INTRODUCTION

Anthurium, also called "flamingo flower" is a tropical plant, which belongs to the complex family Araceae. *Anthurium* varieties are common throughout South and Middle America. The genus includes about 300 species, including well-known cultivated species *Anthurium andreanum* and *Anthurium scherzerianum* (Toma, 2009). Anthurium is one of the most popular of the tropical cut flowers which are being grown commercially for export as well as for the local market. In the last decades with a wide range of ornamental plants and cultural knowledge technologies, indoor plants are becoming the most popular passions. Though at first only the rich could afford, today is accessible to anyone. In any home, family atmosphere is warmer, more agreeable, and more restful with plants (Draghia and Chelariu, 2011). In recent years *Anthurium* gained an important place in the collections of passionate in our country, due to the large number of hybrids appeared worldwide, hybrids which present many shapes and colors and are well adapted to our apartments (Cantor, 2008). *Anthurium* genus includes species which are distinguished by great beauty of inflorescence (*A. andreanum*, *A. scherzerianum*) or the richness and elegance of leaves (*A. cristalinum*, *A. coriaceum*). The number of cultivars is very high and is distinguished by their color and beauty. Commercial crops have been established in recent years worldwide, but the largest producers are the United States (Florida) and the Netherlands.

It is well to remember that *Anthurium* is a toxic plant, with all parts poisonous. Ingestion of this plant hardly occurs because chewing causes quickly painful irritation of the mouth and throat. For this plant poisoning symptoms are usually burning, dysphasia (difficulty in swallowing food), and hoarseness, with a degree of toxicity: 3, 4, and 5 (<http://condo.kudika.ro/articol/Anthurium-andreanum-Flamingo.html>). Culture in pots is practiced at *Anthurium scherzerianum*, *Anthurium crystallinum*, *Anthurium coriaceum*, and expanding to the *A. andreanum*. It is a culture that is practiced in our country only in protected areas, greenhouses and apartments.

MATERIAL AND METHOD

Continuous improvement of the range of indoor ornamental plants is a very important objective for researchers and farmers in our country and around the world.

The experiments were conducted during the years 2011-2012, at the "S.C. BRIZA SRL" Cluj-Napoca and in didactical greenhouses at U.S.A.M.V. Cluj-Napoca. Biological material for study consisted of six varieties of *Anthurium andreanum* grown in pots from Holland and imported by Briza Company: 'Alpine', 'Absolute', 'Baleno', 'Alabama', 'Cherry champion' and 'Otazu'. *Anthurium* varieties studied were arranged in randomized blocks, of three repetitions. Each variety was a variant and for each variety was taken 5 plants per repetition, so 15 plants per variety, resulting in a total of 90 potted plants/experience. Observations and measurements were made to all the cultivars on the leaves and flowers (number, length, width, diameter, number of flower/plant). All the data obtained was interpreted statistically by calculating the

average and has tested the significance of differences between variants using LSD test. Also there were analyzed the coefficients of variability (Ardelean and Sestraş, 1996).

RESULTS AND DISCUSSIONS

Elements of plant growth and decor were analyzed and presented in the next tables.

Table 1

The average length of the floral stem of *Anthurium* varieties

Variety (Variant)	The average length of flower stem (cm)	Relative value (%)	± Difference (cm)	Significant difference	CV %
Alpine	35.67	189.4	16.83	xxx	3.2
Absolute	12.67	67.3	-6.17	ooo	4.6
Otazu	18.33	97.3	-0.50	-	3.1
Baleno	13.33	70.8	-5.50	ooo	4.3
Alabama	14.67	77.9	-4.17	ooo	3.9
Cherry Champion	18.33	97.3	-0.50	-	3.1
Average (Control)	18.83	100.0			3.7

LSD 5% 1.13, LSD 1% 1.57, LSD 0.1% 2.27

Depending on the average length of flower stem was noted 'Alpine' variety with very significant positive differences. At the opposite pole were following varieties 'Absolute', 'Baleno' and 'Alabama' which recorded the lowest average length of flower stem with very significant negative deviations from the average experience. The coefficients of variation of floral stems length at analysed varieties are relatively small; all cases analyzed are below 10%. Average value s% of experience was 3.7%, and s% variation limits for the average length of flower stem ranged from 3.1% (Cherry champion) to 4.6% (Absolute).

Table 2

Average number of leaves per plant of *Anthurium* varieties

No.	Variety (Variant)	Average number of leaves	Relative value (%)	± Difference	Significant difference	CV %
1	Alpine	28.33	125.6	5.78	xxx	14.3
2	Absolute	19.67	87.2	-2.89	o	22.9
3	Otazu	18.7	82.8	-3.89	oo	22.3
4	Baleno	28.33	125.6	5.78	xxx	12.4
5	Alabama	18.67	82.8	-3.89	oo	22.3
6	Cherry champion	21.67	96.1	-0.89	-	16.2
	Average (Control)	22.56	100.0			18.4

LSD 5% 2.25, LSD 1% 3.19, LSD 0.1% 4.62

Compared with the average experience, provided values statistically were recorded at five varieties studied. The highest number of leaves was recorded at 'Alpine' and 'Baleno' varieties very significant positive differences. At the

opposite pole the varieties 'Otazu' and 'Alabama' showed differences distinct significantly negative and the variety 'Absolute' shows differences significantly negative. The coefficients of variation calculated for number of leaves in varieties tested was relatively medium in three of the cases analyzed, reaching more than 20%. The s% value mean of the experience was 18.4%, and s% variation limits for the number of leaves ranged from 12.4% (Baleno) to 22.9% (Absolute).

Table 3

The average length of leaves of Anthurium varieties

No.	Variety (Variant)	Length of leaves (cm)	Relative value (%)	± Difference (cm)	Significant difference	CV %
1	Alpine	18.33	108.2	1.39	-	35.5
2	Absolute	13.67	80.7	-3.28	-	11.2
3	Otazu	17.33	102.3	0.39	-	40.5
4	Baleno	15.33	90.5	-1.61	-	19.9
5	Alabama	19.67	116.1	2.72	-	12.8
6	Cherry champion	17.33	102.3	0.39	-	3.3
Average (Control)		16.94	100.0			20.5

LSD 5% 5.42, LSD 1% 7.70, LSD 0.1% 11.15

The average length of the leaves had values close to the varieties studied (table 3), resulting in an amplitude variation between 13.67 cm and 19.67 cm. The average of experience for this character at varieties studied was 16.94 cm. Compared with the average experience, the control variant provided the values statistically not occurred in any of the varieties studied. The coefficients of variation calculated for the average length of leaf to the tested varieties presented medium to large values at two of the cases analyzed were above 20%. S% mean on experience is 20.5%, and s% variation limits to leaf length ranged from 3.3% (Cherry Champion) to 40.5% (Otazu).

Table 4

Average width of spathe of Anthurium varieties studied

No.	Variety (Variant)	Average width of spathe (cm)	Relative value (%)	± Difference (cm)	Significant difference	CV %
1	Alpine	6.33	87.7	-0.89	-	9.1
2	Absolute	7.33	101.5	0.11	-	7.9
3	Otazu	10.67	147.7	3.44	xxx	10.8
4	Baleno	4.33	60.0	-2.89	ooo	13.3
5	Alabama	8.33	115.4	1.11	-	6.9
6	Cherry Champion	6.33	87.7	-0.89	-	9.1
Average (Control)		7.22	100.0			9.5

LSD 5% 1.18, LSD 1% 1.68, LSD 0.1% 2.44

Data from table 4 show that only two varieties present statistical difference comparing to the control variant of this character (7.22 cm). Variety which had

the highest average width of spathe of experience was: ‘Otazu’, with very significant positive differences while ‘Baleno’ had very significant negative. The coefficients of variation calculated for the average width of spathe were relatively small, most being less than 10% on the cases analyzed. S% mean on experience is 9.5%, and the limits of variation s% for the average spathe width ranged from 6.9% (Alabama) to 13.3% (Baleno).

Table 5

Average length spathe of *Anthurium* varieties

No.	Variety (Variant)	Average length of spathe (cm)	Relative value (%)	± Difference (cm)	Significant difference	CV %
1	Alpine	11.67	120.0	1.94	x	30.1
2	Absolute	10.00	102.9	0.28	-	20.0
3	Otazu	11.33	116.6	1.61	-	27.0
4	Baleno	4.00	41.1	-5.72	ooo	50.0
5	Alabama	12.33	126.9	2.61	xxx	20.4
6	Cherry champion	9.00	92.6	-0.72	-	11.1
Average (Control)		9.72	100.0			26.4

LSD 5% 1.68, LSD1% 2.39, LSD 0.1% 2.51

The floral length of spathe had different values in the studied varieties, yielding amplitude of variation ranged between 4.00 cm and 12.33 cm. ‘Alpine’ and ‘Alabama’ varieties were noted significant positive differences, the opposite pole ‘Baleno’ variety recorded very significant negative differences. The coefficients were relatively high, in all varieties over 10%. The variation limits s% has ranged from 11.1% (Cherry Champion) to 50% (Baleno). It follows the variety ‘Cherry champion’, with minimal variability, while ‘Baleno’, presented the largest non-uniformity of the flowers on their length.

Table 6

The average number of flowers per plant of *Anthurium* varieties

No.	Variety (Variant)	Number flowers/ plant	Relative value (%)	± Difference	Significant difference	CV %
1	Alpine	12.33	124,7	2,44	x	20.4
2	Absolute	8.33	84,3	-1,56	-	6.9
3	Otazu	6.33	64,0	-3,56	oo	9.1
4	Baleno	17.67	178,7	7,78	xxx	14.2
5	Alabama	7.33	74,2	-2,56	o	7.9
6	Cherry champion	7.33	74,2	-2,56	o	7.9
Average (Control)		9.89	100,0			11.0

LSD 5% 2.44, LSD 1% 3.46, LSD 0.1% 4.59

The average number of flowers had values close to the varieties studied, yielding an amplitude variation between 7.33 and 17.67. Average of the experience for analyzed character among the six studied varieties was 9.89.

Compared with the average of experience (the control variant), five varieties studied provided statistically values. Thus, 'Baleno' variety had the highest number of flowers with very significant deviations above the average for the entire experience and 'Alpine' variety showed significant positive difference. 'Otazu', 'Alabama' and 'Cherry champion' varieties registered significant negative differences. The coefficients of variation calculated for the number of flowers were relatively small, four of the cases analyzed were below 10% and only two varieties have been recorded medium values. Mean on experience s% was 11.0%, and the variation limits s% for the number of flowers ranged from 6.9% (Absolute) to 20.4% (Alpine).

CONCLUSIONS

Flower stem length data reveals that there was a great variability of this character inside varieties studied. 'Alpine' variety noted very significant positive differences and the opposite ranged 'Absolute', 'Baleno' and 'Alabama' varieties, with very significant negative deviations from the average of experience.

The average length of the leaves had similar values in the varieties studied, there were no values provided in statistical terms.

'Otazu' variety recorded the highest spathe width, showing significant positive differences, while 'Baleno' presented the smaller width of spathe.

Floral spathe length had amplitude of variation between 4.00 to 12.3 cm, remarking 'Alpine' and 'Alabama' varieties with significant positive differences.

The average number of flowers per plant had an amplitude variation from 7.33 to 17.67, 'Baleno' and 'Alpine' varieties, showed positive deviations.

The coefficients of variation calculated for the floral stem length, spathe width and number of flowers/plant had values below 10% for most of the varieties analyzed which indicates good stability of character to descents.

Coefficients of variation for the number of leaves were relatively medium; only three varieties analyzed were above 20%. The coefficients of variation calculated for the leaf length presented medium to large values. The limits of variation (s%) for length of floral spathe ranging from 11.1% (Cherry champion) to 50% (Baleno).

Based on these results it is recommended to extend the culture in our country pot varieties which are distinguished by morphological top characters. Coefficients of variation values obtained in the experiment will be used for improvement of this species in breeding work.

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